



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,334	09/26/2005	Bernhard Pfeiffer	05587-00378-US	7240
23416 7590 09/30/2009 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER WATKINS III, WILLIAM P				
ART UNIT 1794		PAPER NUMBER		
MAIL DATE 09/30/2009		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,334

Applicant(s)

PFEIFFER ET AL.

Examiner

William P. Watkins III

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 4, 6, 8-14 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 6, 8-14 and 21-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09 July 2009 has been entered.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 6, 8-14, 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hack et al. (U.S. 2001/00366559 A1) in view of Goldbach et al. (EP 0 370 342 A2, U.S. 5,190,803 is taken as being an equivalent of the EP '342 reference) further in view of Celanese (GB 1,104,467).

Hack et al. teaches using polyacetal fiber reinforced moldings to make metal channels, such as those taught by Goldbach et al., with plastic ribs that have thickness dimensions which vary (sections 0016 and 0002 of Hack et al. and Figure 1 of

Goldbach et al). The thickness of the rib where it joins the edge of the channel at element 12 in the plane of the mouth of the channel is several times greater than the thickness of the rib in the same plane in the middle of the channel in Figure 1 of Goldbach et al. Celanese teaches using foaming agents to make strong light weight moldings of polyacetals that have a density of .3 to 1.35 grams per cc, an average cell size of .0001 to .1 inch and a cavity volume between 5 and 80% (Example 6, page 1, lines 25-35). The foaming agent may be carbon dioxide which may be injected under elevated pressure into the polymer resin so that it dissolves into the resin (page 2, lines 40-65).

The instant invention claims a molding of polyacetal with a micro-cellular structure that has a variation in wall thickness of at least 3 mm that is foamed by the use of a supercritical fluid and has at least 70% spherical cells with a diameter of 5 to 50 microns, a density 10 to 25% less than a solid resin, and a screw insertion torque of at least 2.5 NM. It would have been obvious to one of ordinary skill in the art to have made the molding of Hack et al. in view of Goldbach et al. out of a foamed polyacetal in order to have a strong light weight molding because of the teachings of Celanese. As the molding material of Celanese has a similar pore size and density as that of the instant claimed invention, the mechanical properties of the dependent claims are taken as being met by this material. The examiner takes notice that gas bubble phases dispersed in liquid phases, as in foaming in a resin, normally assume a spherical shape due to surface energy considerations. Regarding claim 22, Celanese teaches an

oxymethylene co-polymer with adjacent carbon atoms in order to increase thermal stability (page 1, lines 45-60).

4. Applicant's arguments filed 09 July 2009 have been fully considered but they are not persuasive.

Applicant argues that the combination does not teach applicant's claimed use of a super critical fluid as a foaming agent. As detailed in the above rejection, carbon dioxide may be dissolved under pressure in the resin to produce foaming when the pressure is released. The examiner does not see the difference in carbon dioxide dissolved under pressure in the resin and carbon dioxide added as a super critical fluid and dissolved in the resin in terms of final product quality. Applicant argues an unexpectedly good screw insertion torque. The examiner notes that the single Example in the specification is a foamed resin while the Comparison Example is a resin that is not foamed. While the result may be unexpected compared to a solid resin, the closest prior art in the above cited rejection is a foamed resin. There is thus no showing of unexpected results over the closest prior art. Regarding the variation in thickness limitation, the Figures in Goldbach et al. clearly show a large thickness variation as explained in the above rejection. As the channel is used as a structural beam in an automobile and shows a large relative thickness variation, the absolute thickness variation should be larger than that claimed by applicant. Regarding the pore size and pore amounts taught by the combination, the ranges given in the rejection above overlap or contain the instant claimed ranges. The instant claimed ranges are thus

Art Unit: 1794

obvious in view of the ranges taught by the combination of the references. Applicant has not demonstrated unexpected results associated with the specific ranges claimed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Watkins III whose telephone number is 571-272-1503. The examiner works an increased flex time schedule, but can normally be reached Monday through Friday, 11:30 A.M. through 8:00 P.M. Eastern Time. The examiner returns all calls within one business day unless an extended absence is noted on his voice mail greeting.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WW/ww
September 30, 2009

/William P. Watkins III/

Primary Examiner, Art Unit 1794

